

**INTERNATIONAL RAILWAY SAFETY CONFERENCE
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THEME: Maintaining Safety – Keeping pace with change

TITLE OF PRESENTATION

**Evolving with the world to ensure continuous improvement in
Safety.**

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EVOLVING WITH THE WORLD TO ENSURE CONTINUOUS IMPROVEMENT IN SAFETY.

1. INTRODUCTION

Safety is good business and accidents cost money as well as lives. The avoidance and/or minimisation of the cost of freight loss claims, compensation, repairs and disruptions are incentives in themselves for Management in addition to the powerful motivation of avoiding human suffering and inconvenience. In addressing this issue, Spoornet has set as its ultimate goal the elimination of all accidents.

Achievement of this goal, however, demands prudent and robust management of railway safety with major emphasis on conducting tasks according to rules, directives, regulations, systems, etc. Coupled to this, Management is directed to also use money for safety improvement by ensuring improvement in quality of business and processes, new rolling stock and other developments. Vital too, is the need to develop capability to effectively balance the business, operational, financial and subsequent safety demands.

Recent history shows an increase in train and shunting related incidents mainly due to inefficient and sub-standard train operational practices which include technical and human system failures. These incidents have had a negative impact on the company's image.

In order to meet the challenge of effectively addressing current safety issues and moving into a mode of continuous railway safety improvement, Spoornet has reviewed, anew, its current safe railway operating culture and capabilities and has determined that nothing short of an organisation-wide and systemic business process re-engineering and change management programme will enable meeting the challenge.

As an initial prompt, Spoornet subscribes to the following international best practice safety principles:

- All injuries can be prevented
- Employee involvement is essential
- Management is responsible for preventing injuries
- Working safely is a condition of employment
- All operating exposure can be safeguarded
- Management audit is a must
- Training employees to work safely is essential
- Prevention of personal injuries is good business
- Promotion of off-the-job safety for employees

The safety strategy, which Spoornet has adopted, is three pronged:

- The safety cultural road embarked upon is aimed at moving Spoornet safety management from a reactive, supervisory dependent, employee based focus to an interdependent team-driven culture where employees help other to conform, care for others, have team pride and feel ownership for safety, cost and production;
- Safety Regulatory Compliance: and
- Maintaining an adequately managed, resourced and documented safety management system.

2. BACKGROUND

Last year Spoornet introduced you to the journey that we will be embarking on over the next three years to achieve operating rail safety excellence.

As part of exploring the journey to achieve operating rail safety excellence, and to continuously improve and to keep pace with change, Spoornet is embarking on multiple safety projects which will reduce the number of incidents and build towards a safe network.

'Going far beyond the call of duty, doing more than others expect ...this is what excellence is all about. And it comes from striving, maintaining the highest standards, looking after the smallest detail, and going the extra mile. Excellence means doing your very best, in everything and in every way', that is where our journey is aiming at, **Safety Excellence**.

The Spoornet Safety Strategy addresses the following long term Safety Objectives:

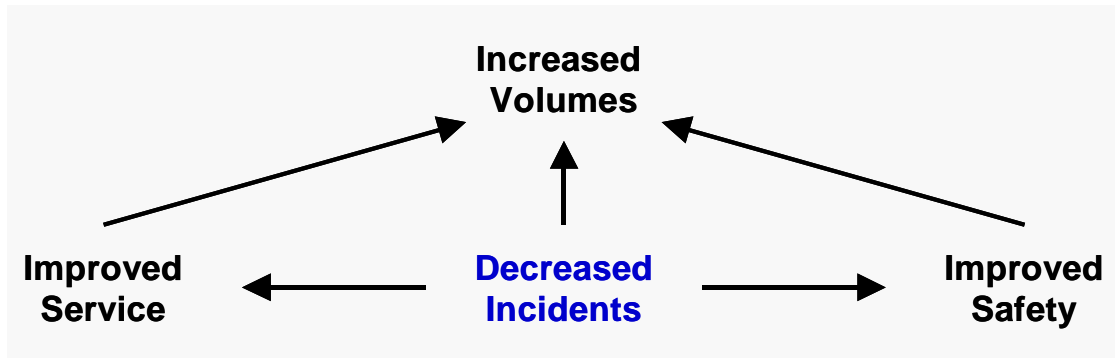
- To develop and sustain world class railway safety standards, policies, processes and training programmes
- To internalise a holistic safety culture in Spoornet
- To promote a culture where every employee takes ownership of safety
- To ensure compliance with railway safety regulatory requirements and all other legislation affecting the health, safety and well-being of employees, the public and the environment;
- To cost effectively employ international best practices to railway safety management;
- To cultivate an internal control environment in Spoornet.

3. SPOORNET'S RAILWAY SAFETY CHANGE INTERVENTIONS

The demand for increased freight traffic is growing and business/industry needs indicate that the demand is set to continue to increase, especially with certain commodities. In the event of increased freight traffic, it is apparent that high standards of performance are to be expected in order to elicit favourable business outcomes. Safety thus becomes an important aspect and is closely linked with increased traffic volumes. By providing customers with an efficient and reliable rail service, Spoornet can create an essential condition for growth both to itself and the greater economy of the country and will achieve maximum business opportunity and profitability.

Reducing occurrences to improve performance

The reduction in operational occurrences is the primary lever to increase transport tempos over the short period. A reduction in operational occurrences also directly improves customer service and safety performance. An increase in transport tempos, improved customer service and safety, will enable Spoornet to deliver increased volumes.

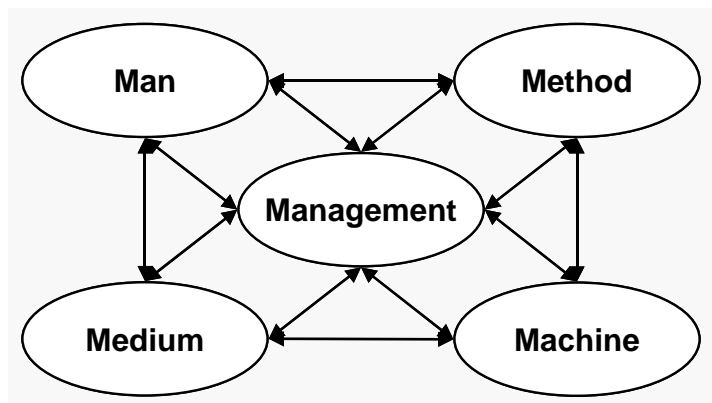


Reducing and preventing operational occurrences

Operational occurrences at a minimum interfere with normal operations (e.g. locomotive failure). It will however impact performance over the short term (e.g. if 'recovery' is not possible or delayed, train delays may come about). At another level, it also leads to accidents, with resultant damage to resources and freight, and at worst, the loss of lives. Dealing with accidents, the consequences and impact thereof, further diverts attention and resources from adding activities and outputs.

Root causes for occurrences are identified and initiatives developed to address such occurrences. Corrective action items are categorised in terms of the following model (the '5M Model'):

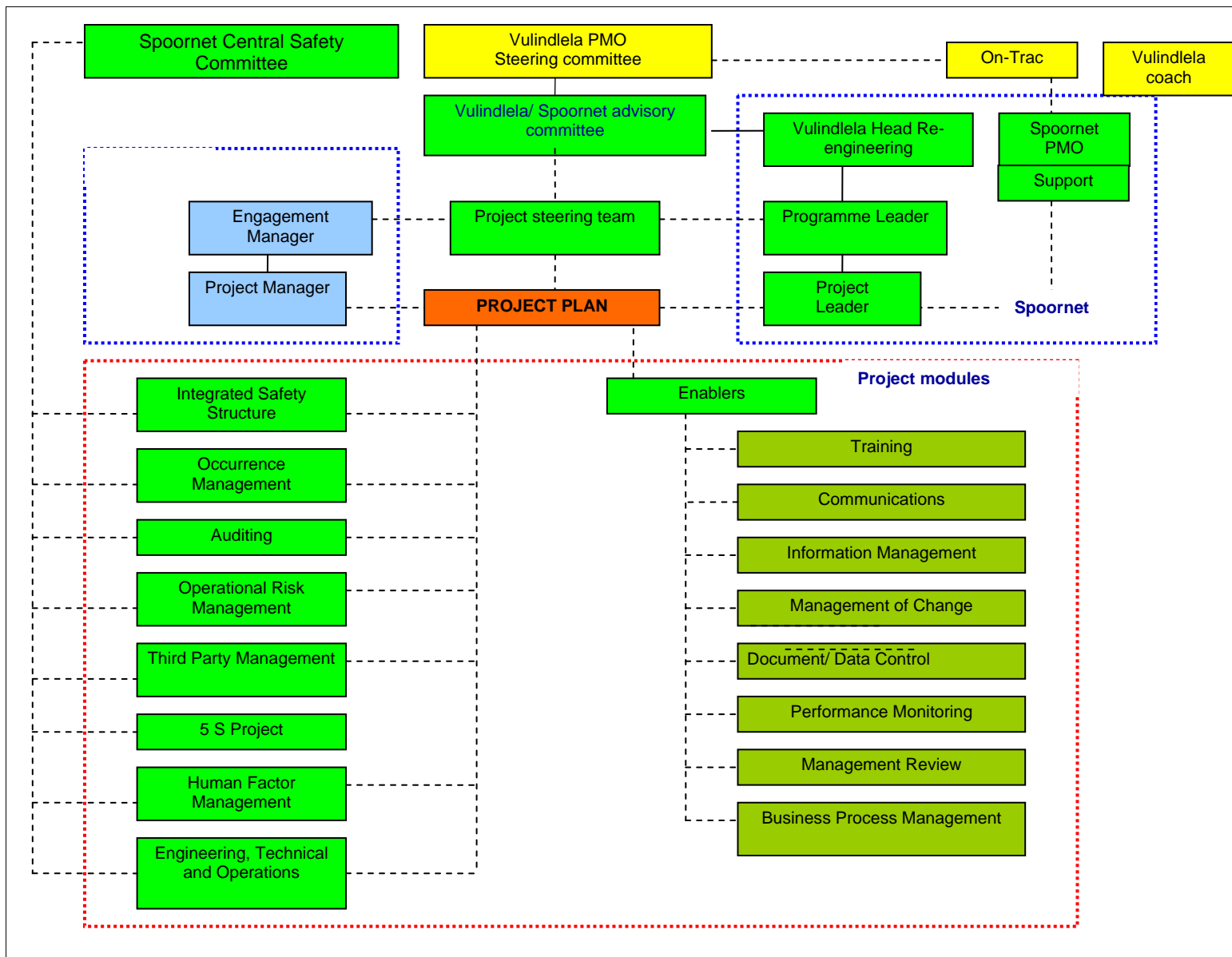
- **Man:** doesn't know – training; doesn't care – motivation and can't do – selection
- **Machine:** poor design, faulty maintenance and procedures
- **Methods:** inappropriate processes
- **Medium:** weak facility design, lack of provision for natural phenomena
- **Management:** inadequate procedures, standards and controls



The various planned interventions are interrelated (as reflected in the 5M Model) and should be managed as such. Man, machine, method and medium interact to produce a successful mission of system output. Management (the controlling factor in operational success or failure) provides the policies and procedures

4. SAFETY MANAGEMENT SYSTEM IMPLEMENTATION PROGRAMME

Though Spoornet Management has adopted a Railway Safety Management System with 23 elements, the full implementation thereof needs to be phased in an orderly manner as part of safety change management. The Vulindlela safety re-engineering programme has been introduced in an effort to implement the Safety Management System. The following diagram is an indication of the desired process flow which will address key safety areas;



Vulindlela – Opening the path

5. CORE ELEMENTS

5.1 CULTURE TRAINING

This includes laying a foundation for an organisation with a world class safety performance through culture training and road shows to promote safety. Safety awareness programme will be conducted through 'Safety Days'.

- Each employee helping other fellow employees to conform
- Be each others' Keeper
- Networking Contributor
- Care for Others
- Organizational Pride

5.2 INTEGRATED SAFETY STRUCTURE

This element includes;

- Defining of operational structure, unit safety teams & RACI model
- Population of the structure
- Implementation of structures - Update job descriptions
- Measure implementation according to procedure

5.3 OCCURRENCE MANAGEMENT

- Review & upgrade processes that support the Contingency Plan
- Review & upgrade on site management process of the occurrence
- Identify qualifications of persons involved in Disaster Management
- Identify & train persons involved in Disaster Management
- Establish drill frequency & execution of simulation exercises
- Evaluate successful execution of drills

Occurrence reporting & Recording

- Define reportable occurrences both internally & externally
- Define process to report occurrences to RSR
- Define occurrence reporting system
- Identify persons involved in Occurrence management
- Identify training needs
- Identify training needs for Spornet Occurrence Management System

Occurrence Investigation

- Review & upgrade process for incident investigation
- Define methodology for occurrence investigations
- Train identified personnel

Management of hazardous Material & Dangerous Goods

- Review & upgrade process to identify hazards of material transported

Transportation of dangerous goods

- Review & upgrade process to manage the transportation of dangerous goods
- Review & upgrade standard for the transportation of dangerous goods

Storage of hazardous Material

- Review & upgrade processes to manage the storage of hazardous Material

5.4 AUDITING

- Review & upgrade processes to be followed for adequacy audits
- Reviewed & upgraded process to be followed for Compliance audits
- Reviewed & upgraded processes to be followed for Behavioural audits
- Identify auditors for Adequacy, Compliance & Behavioural Audits processes
- Review training required per individual
- Train & qualify auditors
- Identify persons responsible to assemble & report measurements
- Review performance metrics as per procedure
- Identify corrective actions as required
- Follow-up on completion of corrective action
- Implement corrective actions

5.5 THIRD PARTY MANAGEMENT

- Review & upgrade procedures for the management of contracts
- Review & upgrade procedures that allows for selection, control & review of contracts
- Review & upgrade process for reviewing tender or proposal documents
- Review & upgrade process for checking compliance of contractor
- Review & upgrade procedure that manages contractor safety

Procurement Management

- Review & upgrade procedures for ensuring purchasing of goods, services etc.
- Review & upgrade procedure that ensures procurement documents
- Review & upgrade procedure that verify that supplied goods correct
- Review & upgrade roles & responsibilities

Interface Management

- Revise & implement procedure for interface of other operators
- Review & upgrade resources required for interface management
- Review & implement procedure for managing interfaces
- Finalise interface agreements & submission

5.6 OPERATIONAL RISK ASSESSMENT

- Revise Operational risk Assessment procedure
- Develop operational risk control Procedure
- Execute operational risk assessment processes
- Review & upgrade the triggers for a change management process

5.7 '5 S PROJECT'

The focus thus is on short-term behavioural changes prioritized as the “**5S**” viz. **S**ubstance abuse testing, **S**peeding, **S**leepiness (fatigue testing), **S**ignal visibility and **S**upervision

5'S Objectives

- ❑ Main target of Safety First project is the complete avoidance of incidents in Spoornet in a short period of time.
- ❑ •Stability in safety. •Short-term safety implementation of a focussed set of safety measures.
- ❑ •Enforcement of safety compliance/behavioural change.
- ❑ •To be in top quartile of international safety best practice

Project	Actions
Speed	<ul style="list-style-type: none"> • Real time speed warning signal based on GPS online monitoring along speed envelope • Regular radar controls
Sleepiness (Fatigue)	<ul style="list-style-type: none"> • Full implementation of driver shift sign-on check with PVT • More regular shift assignment
Substance Abuse	<ul style="list-style-type: none"> • Full implementation of breathalyser tests at start and end of shift
Signals	<ul style="list-style-type: none"> • Assessment and classification of signal visibility • Refocusing of signals • Repositioning of signals
Supervision	<ul style="list-style-type: none"> • Create winner in workplace • Section managers to regularly accompany trains

5.8 HUMAN FACTOR MANAGEMENT

- ❑ Identify current Human Factor Management programmes & initiatives & effectiveness
- ❑ Identify all available HFM policies, standards, guidelines & SOP's
- ❑ Identify gaps-benchmark/best practices
- ❑ Develop process to ensure HFM in design of new equipment for railway safety

Safety related Work

- ❑ Review & upgrade process for identifying safety related/safety critical grades
- ❑ Review & upgrade procedure to ensure physical/mental fitness
- ❑ Review & upgrade the policy & procedure for substance abuse

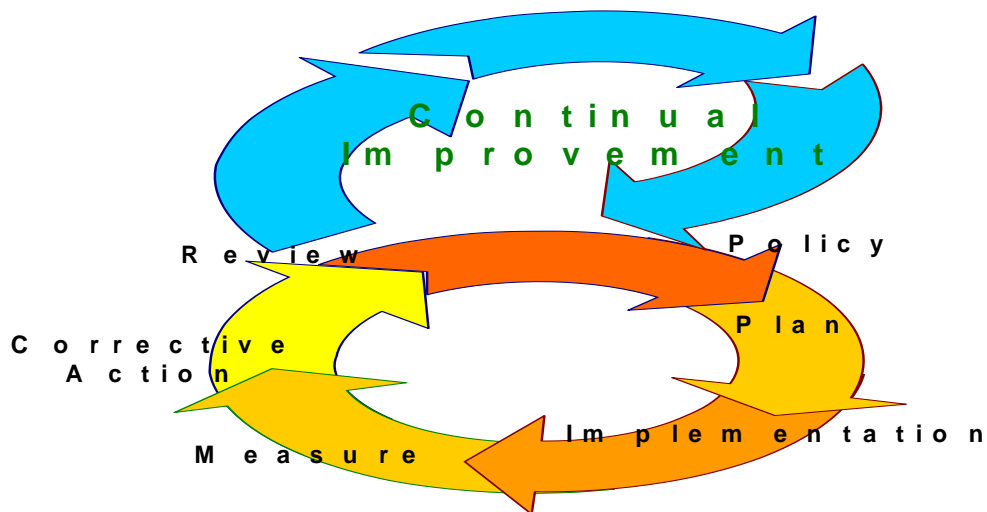
5.9 ENGINEERING, TECHNICAL AND OPERATIONS

- ❑ Revise & implement procedures for engineering & technologies
- ❑ Revise & implement procedures for effective monitoring, control & verification of design, inspection & testing of safety related matters, control & monitoring of special projects, corrective action on inspection

5.10 GENERAL

- ❑ Revise & implement procedure for development of risk-based Safety Plan
- ❑ Revise & implement procedure for managing safety legislation
- ❑ Revise & implement Service Delivery Safety Deviation communication

To ensure that the fundamentals of the Safety Management System are implemented in an orderly fashion, the process will be introduced as depicted in the following diagram;



6. OPERATING TECHNOLOGIES

In an effort to be in the top quartile of international safety best practice, Spoornet has identified the following technological safety improvements:

Projects	Actions
Technology	<input type="checkbox"/> Pupilometers <input type="checkbox"/> CS90/CTC – Control System <input type="checkbox"/> On-Board Computer (OBC) <input type="checkbox"/> Decentralised train simulators <input type="checkbox"/> Remote Control Shunting

6.1 PUPILOMETERS

Purpose

Pupillometer uses the patented technologies to deliver reliable pupil measurements for the detection of substance abuse and fatigue

Why do we need Pupillometer?

- Potential high number of incidents caused by sleepiness.
- Testing of physical fitness currently very rough and subjective
-

Bad in cab conditions and ineffective in cab sleep control mechanism increase likelihood for fatigue related incidents.

Benefits of Pupillometer:

Prevented train accidents due to fatigue.

6.2 CS90/CTCVDU-CONTROL SYSTEM

CS90 – CTC VDU in its basic form is

CTC equipment which is used by the TCO for authorizing train movements remotely for a number of stations and sections between stations, via signaling system with the primary purpose to ensure safety (safe rail movement) at increased capacity.

6.3 OBC – ON BOARD COMPUTER (BRAZILIAN CBL)

Benefits

Line Speed violation protection (Train Stop)
Line Speed limit onboard
Alarm to Driver & TCO when over speeding
Activate brakes
Released only by TCO
Produce Post Train Trip Report
Produce Speed profile per trip per driver
Downloaded at destination
Analysed and stored locally and centrally

6.4 DECENTRALISED TRAIN SIMULATOR

Benefits

Higher productivity in basic training of new train drivers
Higher productivity in re-training
Cost reduction in basic training
Reduction in re-training costs
Reduction in incidents and accidents
Reduction in basic training manhours required
Higher operational efficiency and productivity
Reduced energy consumption

6.5 REMOTE CONTROL SHUNTING

Benefits

Reduction of occurrences due to number of shunting personnel
Financial benefit

7. ROLLING STOCK ENGINEERING PROGRAMMES

7.1 WAGONS

Capital is injected to make up and speed up Backlog Maintenance Programme

- Current Maintenance Programme Building of new wagon fleet (Transwerk Programme)

7.2 LOCOMOTIVES

- Brand new locomotives Refurbishment of old 6E class to 18E class Upgrading of 34 Diesel class to 39 Diesel class

These projects are driven through an extensive Capital Investment over the next five years

8. CONCLUSION

- As Spoornet, we want to be a leader in safe railway operations through the continuous improvement of railway safety processes, and always be in the top quartile of international safety best practice